

AMENDMENTS TO THE CLAIMS:

Claims 1-123 (Cancelled).

124. **(Currently amended)** A process for preparing a medical implant having an improved balance of wear properties and oxidation resistance comprising the steps of:

irradiating a fabricated article comprising ultrahigh molecular weight polyethylene to form free radicals in the ultrahigh molecular weight polyethylene;

heating the irradiated fabricated article in a substantially oxygen-free atmosphere to a temperature above about 150°C, for a time sufficient to recombine substantially all of the free radicals and cross-link the ultrahigh molecular weight polyethylene;

cooling the cross-linked fabricated article while maintaining a substantially oxygen-free atmosphere;

forming a medical implant from the cross-linked fabricated article;

and

sterilizing the implant using standard means.

125. **(Currently amended)** A process for preparing a medical implant having an improved balance of wear properties and oxidation resistance comprising the steps of:

irradiating a fabricated article comprising ultrahigh molecular weight polyethylene to form free radicals in the ultrahigh molecular weight polyethylene;

heating the irradiated fabricated article in a substantially oxygen-free atmosphere to a temperature above about 150°C, to cross-link the ultrahigh molecular weight polyethylene;

cooling the cross-linked fabricated article while maintaining a substantially oxygen-free atmosphere; and

forming a medical implant from the cross-linked fabricated article.

126. (Previously presented) A medical implant prepared according to the process of claim 124.

127. (Previously presented) A medical implant prepared according to the process of claim 125.

128. **(Currently amended)** A cross-linked ultrahigh molecular weight polyethylene (UHMWPE) having a swell ratio of less than about 5 and has a degree of oxidation ranging from about 0.01 to about 0.15 at a depth of between about 20 μm to about 3 mm of the cross-linked UHMWPE, wherein the cross-linked UHMWPE is made by a process comprising irradiating the UHMWPE to form free radicals in the UHMWPE; melting the irradiated UHMWPE; and allowing the UHMWPE to cool.

129. (Previously presented) A medical implant comprising the ultrahigh molecular weight polyethylene of claim 128.

130. **(Currently amended)** A process for preparing a medical implant having an improved balance of wear properties and oxidation resistance comprising the steps of:

irradiating a fabricated article comprising ultrahigh molecular weight polyethylene to form free radicals in the ultrahigh molecular weight polyethylene;

heating the irradiated fabricated article to a temperature at or above about 150°C, for a time sufficient to recombine substantially all of the free radicals and cross-link the ultrahigh molecular weight polyethylene;

cooling the cross-linked fabricated article;

forming a medical implant from the cross-linked fabricated article;

and

sterilizing the implant using standard means.

Claims 131-142 (Cancelled).

143. **(Currently amended)** A process for preparing a medical implant having improved wear and oxidation resistance, wherein the method comprises:

irradiating a fabricated article comprising ultrahigh molecular weight polyethylene to form free radicals in the ultrahigh molecular weight polyethylene;

heating the irradiated fabricated article to a temperature at or above the melting point such that the free radicals can recombine, thereby forming a cross-linked fabricated article;

forming an implant from the cross-linked fabricated article; and
sterilizing the implant using standard means.

144. (Previously presented) The process according to claim 143, wherein the standard means include heat.

145. (Previously presented) The process according to claim 124, wherein the standard means include heat.

146. (Previously presented) The process according to claim 130, wherein the standard means include heat.

147. **(Currently amended)** A process for preparing a medical implant having improved wear and oxidation resistance, wherein the method comprises:

irradiating a fabricated article comprising ultrahigh molecular weight polyethylene to form free radicals in the ultrahigh molecular weight polyethylene; melting the irradiated fabricated article comprising ultrahigh molecular weight polyethylene in order to cross-link the ultrahigh molecular weight polyethylene and then allowing the fabricated article to cool; and

forming an implant from the cross-linked fabricated article.

148. (Previously presented) The process according to claim 147, further comprising sterilizing the implant using standard means.

149. (Previously presented) The process according to claim 148, wherein the standard means include heat.